

# Java Methods for Radar & Satellite Data Ingest

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**Global Systems Division (GSD)  
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# **GSD's Central Facility**

- **Acquires conventional and experimental weather data for GSD's R&D projects, e.g.,**
  - Rapid Update Cycle (RUC), Rapid Refresh, HRRR, FIM
  - Local Analysis and Prediction System (LAPS)
  - Meteorological Assimilation Data Ingest System (MADIS)
- **Local ground station capability for “raw” GOES Variable (GVAR) data (*terminated Oct 7, 2010!*)**
  - Originally for GOES I-M Product Assurance Plan (GIMPAP) activities, as well as support for initial AWIPS development
- **Level-II/III NEXRAD, WSI NowRAD, NSSL mosaics**
- **Numerous data sets from NCEP, NESDIS, NASA, SSEC, Aviation Wx Center (AWC),...**



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# **NEXRAD Level-II Ingest**

- Evolution of methods: 90's – 4/2010
- LDM “Client” to capture Level-II data stream to disk
  - LdmNexrad2Tar(GZ)
  - LdmNexrad2Flat – “raw” format ala Unidata’s *motherload* server
    - Readable in IDV
- **Nexrad2NetCDF methods to prepare data for LAPS & other applications**
  - LdmNexrad2NetCDF – tilt-by-tilt, on-the-fly
  - ArchiveNexrad2NetCDF – by volume scan
    - Currently configured for 104 radars
  - **Now in testing: Unidata’s java netcdf, aka toolsUI (netcdfAll.jar)**

FSL4 ^FSL\TEXT\MMXX55\KBOU\..\*.Nexrad2Flat\.(K.\*).raw

java -cp /usr/local/rtsys/bin/netcdfAll.jar ucar.nc2.dataset.NetcdfDataset -out /public/data/radar/wsr88d/wideband\1\nc\2.nc -in



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# **GOES Satellite Ingest**

- Evolution of methods at GSD: ~1980 – 10/2010
- Historically, C/C++ ingest clients to capture “raw” GOES (GVAR) from downlink
- Gvar(Imager|Sounder)2NetCDF to prepare data for LAPS & other applications
- Now: **McArea2NetCDF java program**
  - Cron job acquires data from NESDIS McIDAS/ADDE servers
  - Creates “GVAR netCDF” files ~identical to earlier methods
  - Uses java netCDF package (including McIDAS classes)
  - ncML instead of cdl for file content definition
  - Also can acquire MSG, MTSAT, FY-2 data from NESDIS (but not in GVAR-style format)



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# *Configuring McArea2NetCDF*

- **McIDASArea2NetCDF.pl wrapper script for java program**

- **Command line (15-min cron job)**

```
/usr/local/rtoper/scripts/McIDASArea2NetCDF.pl -c /usr/local/rtoper/etc/  
McArea2NetCDF_gvar_goes-west_fsl-pacus.cfg -l /usr/local/rtoper/log/gvar/goes-  
west/fsl-pacus  
-p McArea2NetCDF.GOESWest.fsl-pacus
```

- **Config file – McArea2NetCDF\_gvar\_goes-west\_fsl-pacus.cfg**

```
channel      = 11u  
xmlpath     = /usr/local/rtoper/etc/area2nc_gvar_goes-west_fsl-pacus_ir.xml  
outpath     = /tmp_data/gvar/goes-west/raw/image/fsl-pacus/netcdf  
areofile    = adde://SATEPSDIST3E.NESDIS.NOAA.GOV/imagedata?  
group=GWR&descr=GWPACU04I4&cal=raw&unit=raw&size=all&debug=true
```



# *Configuring McArea2NetCDF - 2*

- **ncML file – area2nc\_gvar\_goes-west\_fsl-pacus\_ir.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<netcdf xmlns="http://www.unidata.ucar.edu.namespaces/netcdf/ncml-2.2">

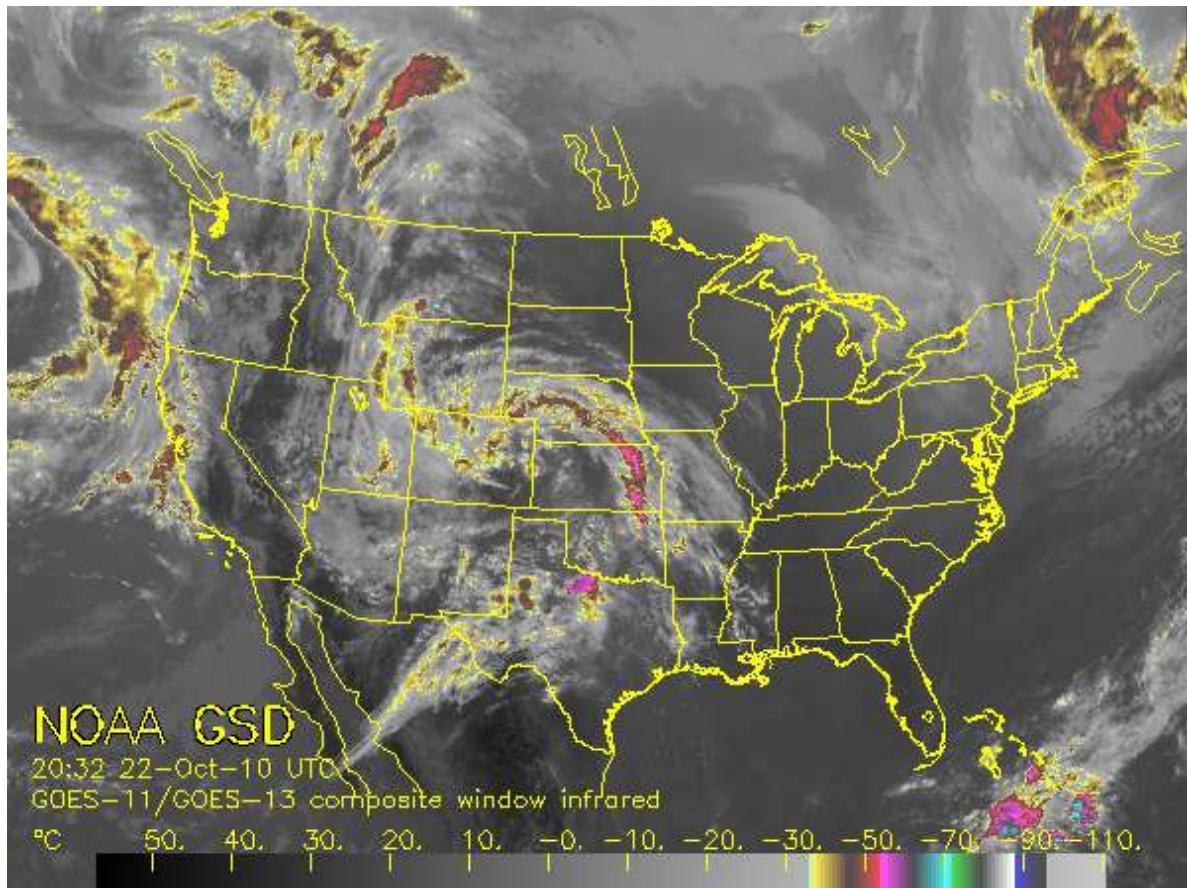
    <dimension name="x" length="2003" />
    <dimension name="y" length="986" />
    <dimension name="orbitAttitudeLen" length="336" />
    <dimension name="dimNameLength" length="1" />

    <attribute name="startLine_g11" value="2512" type="int" />
    <attribute name="startElem_g11" value="13500" type="int" />
    <attribute name="lineRes" value="4" type="int" />
    <attribute name="elemRes" value="4" type="int" />

    <!-- variable name="lat" shape="y x" type="float"--
        <attribute name="long_name" value="latitude coordinate" />
        <attribute name="units" value="degrees_north" />
        <attribute name="standard_name" value="latitude" />
        <attribute name="_CoordinateAxisType" value="Lat" />
    </variable -->
    [SNIP]
</netcdf>
```



# Merged GOES-11/13 IR Image\*



\* Using MergeConusImages, a java netCDF program



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# *Final Thoughts*

- Community moving to CF (Climate and Forecasting) standards for netCDF
- Makes using/sharing data easier (e.g., THREDDS)
- Glaps2CF java program converts GLAPS output to CF format for SOS user
- toolsUI/ncML methods facilitate virtualizing data (e.g., remote files, munged attributes and variable names)
- Ultimately, compatibility w/ NWS' 4D Wx Cube (see Chris M.'s talk tomorrow)



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# Questions?



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